

## AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of altering gene expression of ~~reprogramming~~ a cell, said method comprising the steps of:

(a) incubating a nucleus from a donor cell with a reprogramming media under conditions that allow the removal of a factor from said nucleus or the addition of a factor from said reprogramming media to said nucleus; and

(b) inserting said nucleus or a chromatin mass formed from said nucleus into a recipient somatic cell or cytoplasm, thereby altering gene expression of said ~~forming a reprogrammed~~ cell.

2. (Currently amended) A method of altering gene expression of ~~reprogramming~~ a cell, said method comprising the steps of:

(a) incubating a chromatin mass from a donor cell with a reprogramming media under conditions that allow the removal of a factor from said chromatin mass or the addition of a factor from said reprogramming media to said chromatin mass; and

(b) inserting said chromatin mass or a nucleus formed from said chromatin mass into a recipient somatic cell or cytoplasm, thereby altering gene expression of said ~~forming a reprogrammed~~ cell.

3. (Cancelled) A method of reprogramming a cell, said method comprising incubating a permeabilized cell with a reprogramming media under conditions that allow the removal of a factor from the nucleus or chromatin mass of said permeabilized cell or the addition of a factor from said reprogramming media to said nucleus or chromatin mass, thereby forming a reprogrammed cell.

4-9. (Cancelled)

10. (Cancelled) A method of treating or preventing a disease, disorder, or condition in a mammal, said method comprising the steps of:

(a) incubating a nucleus from a donor cell with a reprogramming media under conditions that allow the removal of a factor from said nucleus or the addition of a factor from said reprogramming media to said nucleus;

(b) inserting said nucleus or a chromatin mass formed from said nucleus into a recipient cell or cytoplasm, thereby forming a reprogrammed cell; and

(d) administering said reprogrammed cell to a mammal in need of said cell type.

11. (Cancelled) A method of treating or preventing a disease, disorder, or condition in a mammal, said method comprising the steps of:

(a) incubating a chromatin mass from a donor cell with a reprogramming media under conditions that allow the removal of a factor from said chromatin mass or the addition of a factor from said reprogramming media to said chromatin mass;

(b) inserting said chromatin mass or a nucleus formed from said chromatin mass into a recipient cell or cytoplasm, thereby forming a reprogrammed cell; and

(d) administering said reprogrammed cell to a mammal in need of said cell type.

12. (Cancelled) A method of treating or preventing a disease, disorder, or condition in a mammal, said method comprising the steps of:

(a) incubating a permeabilized cell with a reprogramming media under conditions that allow the removal of a factor from the nucleus or chromatin mass of said permeabilized cell or the addition of a factor from said reprogramming media to said nucleus or chromatin mass, thereby forming a reprogrammed cell; and

(b) administering said reprogrammed cell to a mammal in need of said cell type.

13. (Cancelled) The method of claim 3 or 12, wherein said reprogramming media is an interphase reprogramming media or a mitotic reprogramming media.

14. (Currently amended) The method of claim 1 ~~or 10~~, wherein said nucleus remains membrane-bounded and the chromatin in said nucleus does not condense during incubation with said reprogramming media.

15. (Currently amended) The method of claim 1 ~~or 10~~, wherein a chromatin mass is formed from incubation of said nucleus in said reprogramming media.

16. (Currently amended) The method of claim 1 ~~or 10~~, wherein said chromatin mass is incubated in an interphase reprogramming media under conditions that allow a nucleus to be formed from said chromatin mass and said reformed nucleus is inserted into said recipient cell or said recipient cytoplasm.

17. (Cancelled)

18. (Currently Amended) The method of claim 1 or 2, ~~any one of claims 1-3 or 10-12~~, wherein at least 5 mRNA or protein molecules are expressed in said reprogrammed cell that are not expressed in said donor cell or said permeabilized cell.

19. (Original) The method of claims 18, wherein said 5 mRNA or protein molecules are specific for a cell type of interest.

20. (Currently Amended) The method of claim 1 or 2, ~~any one of claims 1-3 or 10-12~~, wherein at least 5 mRNA or protein molecules are expressed in said donor cell or said permeabilized cell that are not expressed in said reprogrammed cell.

21. (Currently amended) The method of claim 1 or 2 ~~any one of claims 1-3 or 10-12~~, wherein said donor cell ~~or said permeabilized cell~~ is an interphase or mitotic cell.

22. (Currently amended) The method of claim 1 or 2 ~~any one of claims 1-3 or 10-12~~, wherein said donor cell, ~~said permeabilized cell~~, or said recipient cell, ~~said recipient cytoplasm, or said reprogrammed cell~~ is an epithelial cell, neural cell, epidermal cell, keratinocyte, hematopoietic cell, melanocyte, chondrocyte, B-cell, Jurak cell, T-cell, erythrocyte, macrophage, monocyte, fibroblast, muscle cell, embryonic stem cell, or adult stem cell.

23. (Currently amended) The method of claim 1, ~~3, 10, or 12~~, wherein said donor cell or ~~said permeabilized cell~~ is a B-cell, Jurak cell, or fibroblast and ~~said reprogrammed cell is a T-cell~~.

24. (Cancelled) The method of claims 3 or 12, wherein said recipient cell or said cytoplasm is an undifferentiated cell.

25. (Cancelled) The method of claims 3 or 12, wherein said reprogramming media is a cell extract.

26. (Cancelled) The method of any one of claims 10-12 wherein said donor cell, said permeabilized cell, said recipient cell, or said recipient cytoplasm is from a human.

27. (Cancelled) The method of any one of claim 10-12, wherein said disease, disorder, or condition is a neurological, endocrine, structural, skeletal, vascular, urinary, digestive, integumentary, blood, immune, autoimmune, inflammatory, or muscular disease, disorder, or condition.

28. (Cancelled) A method for measuring endogenous alkaline phosphatase protein in a cell, nucleus, chromatin mass, cell lysate, or *in vitro* sample, said method comprising the steps of:

(a) contacting a solid support with a test sample from cell, nucleus, chromatin mass, cell lysate, or *in vitro* sample and with a reference sample, wherein said test sample has a known protein concentration or is derived from a known number of cells, and wherein said reference sample has a known level of alkaline phosphatase protein or activity;

(b) measuring the level of endogenous alkaline phosphatase protein or activity in said test sample; and

(c) comparing said level of endogenous alkaline phosphatase protein or activity in said test sample with the level of alkaline phosphatase protein or activity in said reference sample, thereby determining the level of alkaline phosphatase protein in said cell, nucleus, chromatin mass, cell lysate, or *in vitro* sample.

29. (Cancelled) The method of claim 28, wherein said solid support is a membrane or plastic surface.

30. (Cancelled) The method of claim 28, wherein said cell is a stem cell.

31. (Cancelled) A cell produced using the method of claim 1 or 2, wherein

(i) said cell expresses a T-cell receptor or IL-2 and one or more fibroblast-specific proteins;

(ii) said cell expresses a neurofilament protein and one or more fibroblast-specific proteins;

(iii) said cell expresses the neurofilament protein NF200 and is immortalized;

(iv) said cell expresses Oct4 or alkaline phosphatase and one or more fibroblast-specific proteins; or

(v) said cell expresses one or more fibroblast-specific proteins and grows in aggregates, forms colonies, or forms embryoid bodies.

32. (New) The method of claim 1, wherein said donor cell is a mammalian cell.

33. (New) The method of claim 1, wherein said recipient cell is a mammalian cell.

34. (New) The method of claim 1, wherein said donor cell and said recipient cell are mammalian cells.

35. (New) The method of claim 34, wherein said reprogramming media is a cell extract.

36. (New) The method of claim 1, wherein said reprogramming media is a cell extract.

37. (New) The method of claim 2, wherein said donor cell is a mammalian cell.

38. (New) The method of claim 2, wherein said recipient cell is a mammalian cell.

39. (New) The method of claim 2, wherein said donor cell and said recipient cell are mammalian cells.

40. (New) The method of claim 39, wherein said reprogramming media is a cell extract.

41. (New) The method of claim 2, wherein said reprogramming media is a cell extract.

42. (New) A method of altering gene expression of a cell, said method comprising the steps of:

(a) incubating a nucleus from a donor cell in a cell extract; and

(b) inserting said nucleus or a chromatin mass formed from said nucleus into a recipient somatic cell or cytoplasm, thereby altering gene expression of said cell.

43. (New) The method of claim 42, wherein said donor cell is a mammalian cell.

44. (New) The method of claim 42, wherein said recipient cell is a mammalian cell.

45. (New) The method of claim 42, wherein said donor cell and said recipient cell are mammalian cells.

46. (New) A method of altering gene expression of a cell, said method comprising the steps of:

(a) incubating a chromatin mass from a donor cell in a cell extract; and  
(b) inserting said chromatin mass or a nucleus formed from said chromatin mass into a recipient somatic cell or cytoplasm, thereby altering gene expression of said cell.

47. (New) The method of claim 46, wherein said donor cell is a mammalian cell.

48. (New) The method of claim 46, wherein said recipient cell is a mammalian cell.

49. (New) The method of claim 46, wherein said donor cell and said recipient cell are mammalian cells.